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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/696,060 | 10/29/2003 | Vladimir Grushin | PE0649USDIV1 | 5927 |

23906 7590 12/20/2005

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LEGAL PATENT RECORDS CENTER
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WILMINGTON, DE 19805

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| EXAMINER |
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SMOOT, STEPHEN W

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| ART UNIT | PAPER NUMBER |
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2813

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,060

Applicant(s)

GRUSHIN ET AL.

Examiner

Stephen W. Smoot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15, 16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15 and 19 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9-29-05</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
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DETAILED ACTION

This Office action is in response to applicant's amendment filed on 29 September 2005.

Specification

1. The disclosure is objected to because of the following informality:

Update the first sentence of the specification (see amendment filed 9-29-05, page 2) to indicate that 10/027,421 has issued as US 6,670,645.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Igarashi et al. (US 2002/0048689 A1).

Igarashi et al. disclose iridium (Ir) metal complexes for use in electroluminescent devices. Formula (1-2) on p. 7 is an exemplary iridium compound that includes two phenylpyridine ligands with each phenylpyridine ligand having a fluorine substituent, one chlorine ligand, and one phosphine ligand that includes three phenyl groups with each phenyl group having a fluorine substituent. The emission wavelength necessarily falls between 450-500 nm because the same compound as claimed is disclosed in Igarashi et al. The amount of the Ir complex in the light-emitting layer is 1% to 50% (paragraph [0043]), which reads on at least 20%.

These are all of the limitations set forth in claim 15 of the applicant's invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuboyama et al. (US 2003/0054198 A1) in view of Baldo et al. (WO 00/70655) and Forrest et al. (US 6,894,307 B2).

Tsuboyama et al. disclose iridium (Ir) metal complexes for use in electroluminescent devices. The ligands on the iridium metal ion include, *inter alia*, two, substituted or unsubstituted 2-phenylpyridines and one unsubstituted or a methyl- or fluoro-substituted 8-quinoline [p. 7, formula 42 and p. 12, formulas (11) and (13)]. Each of the 2-phenylpyridines may be substituted with fluorine and trifluoromethyl at any location on the rings (p. 4, paragraph [0047]-[0049]), which reads on the claimed two ligands of 2-(4-fluorophenyl)-5-trifluoromethylpyridine. Also, Tsuboyama et al. disclose that the iridium complexes are used in the light-emitting layer of an electronic, light-emitting device (Figs. 1-5; p. 22, paragraphs [0145]-[0160]).

However, Tsuboyama et al. do not expressly teach or suggest that the methyl group of the 8-quinoline as shown on p. 12, formula (13) is located at the same location on the nitrogen ring, that is, specifically bonded to the carbon adjacent the nitrogen as claimed in claim 19. Further, Tsuboyama et al. do not expressly teach or suggest that the iridium complexes be used in an electron transport layer, which is also a limitation of applicant's claim 19.

Baldo et al., like Tsuboyama et al. disclose substituted ligands for electroluminescent Ir metal complexes, and teach that the substituent groups can be located in any position on either ring of the ligands. Baldo et al. indicate that moving the functional group can advantageously be used to alter emissive properties like color

emission and carrier transport (Baldo et al., pp. 14-15). Forrest et al. teach that materials used to produce electroluminescent emission can also be used in an electron transporting layer (see column 7, lines 29-34).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to locate the substituents of Tsuboyama et al. at each specific location on the 8-quinoline ring to beneficially affect the emissive properties of the Ir complex, as taught by Baldo et al., to thereby gain a broader range of color emissions. It also would have been obvious to use the iridium complexes in an electron transporting layer, as taught by Forrest et al., because they recognize that the same materials used to produce electroluminescent emission can also function as an electron transport layer (see column 7, lines 31-34).

Allowable Subject Matter

6. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of claim 15.

7. The following is an examiner's statement of reasons for allowance: Claim 16 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, an organic electronic device that includes an emitting layer that contains at least 20 weight % of an iridium compound that has the

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applicant's as claimed sixth formula, wherein L' is a trifluoromethyl phenyl phosphine, a dimethyl phenyl isocyanide, or a toluenesulfonylmethyl isocyanide.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

8. Applicant's arguments filed on 29 September 2005 regarding the rejection of claim 15 under 35 USC 102(e) (see page 6), have been fully considered but they are not persuasive.

The applicant asserts that their amendment to claim 15 is sufficient to overcome the rejection of claim 15 under 35 USC 102(e) as being anticipated by Igarashi et al. However, as indicated above, formula (1-2) as disclosed by Igarashi et al. on page 7 is one example of an iridium compound that includes a phosphine ligand with phenyl groups that use fluorine as a substituent.

9. Applicant's arguments with respect to claim 19 have been considered but are moot in view of the new grounds of rejection.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

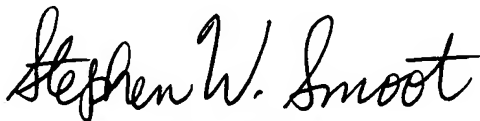
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWS

A handwritten signature in black ink that reads "Stephen W. Smoot". The signature is written in a cursive, flowing style.

STEPHEN W. SMOOT
PRIMARY EXAMINER